Habitat Expansion Agreement

for

Central Valley Spring-Run Chinook Salmon and California Central Valley Steelhead

Questionnaire Instructions

The attached questionnaire is intended to solicit information needed by the Steering Committee to review projects relative to the criteria established in the Habitat Expansion Agreement. For each proposed action (project), please complete the questionnaire to the fullest extent possible. Please provide citations where applicable and provide a full reference for each citation at the end of this questionnaire (Section X. Supporting Documents). Specific instructions follow.

I. Contact Information

Provide the name of the agency or group making the proposal as well as a contact person for the project. Include contact information such as mailing address, phone number, and email address.

II. Project Description

Provide a descriptive name for the action (project). If the action is listed in the *Working List of Potential Habitat Expansion Actions* (provided during the January 2009 meetings of HEA parties), please include the reference number associated with the action. The project location should specify the watershed or subwatershed (e.g., Deer Creek, Beegum Creek) as well as specific areas within the watershed where the project will be located and what portions of the watershed will benefit from the project. Please include geographic coordinates of the project location(s), if applicable. The project description should be a narrative that provides as much detail as possible about the project.

III. Species Limiting Factors

In this section, indicate the factors that currently limit production of spring-run Chinook salmon and/or steelhead in your watershed. The intent is that the environmental and biological objectives of your project address these limiting factors in some way. Please check one or more of the limiting factors that apply to your watershed. In the second column, describe how and where the factor limits spring-run Chinook salmon and/or steelhead. For each factor that you check, please rank its effect on spring-run Chinook salmon and/or steelhead using the drop-down box in the last column. Finally, we also ask that you describe the source of your conclusions, such as a watershed assessment or other document. Please provide enough information that we can find the document if we need it.

IV. Project Objectives—Environmental

Environmental objectives describe how the project is intended to address the limiting factors to achieve the biological objective described in the next section. Environmental objectives should be as specific and quantitative as possible (e.g., reduce gravel embeddedness in the watershed from 75% to 25% by fencing riparian areas to exclude cattle and allow riparian forest to reestablish). Describe how you think environmental objectives relate specifically to the biological objectives. In the last column, we ask you to describe the environmental objectives as either the primary or secondary focus of the project. For example, a project to plant trees might have a primary focus on riparian/floodplain function with a secondary focus on temperature or water quality.

V. Project Objectives—Biological

Biological objectives describe the anticipated biological response from the project and should be as quantitative as possible. Indicate which species and life stages are the focus of the project. Describe specifically the general condition of the target species in your watershed relative to the historical abundance. The condition of the species should be indicated using the categories in the drop-down box. Species condition categories are defined on the last page of this form. Biological objectives should include the following information: (1) an estimate of the expected contribution of the project in terms of potential adult returns, to the extent possible (and an explanation of how the estimate was developed); and (2) an explanation of how the biological objective for the species is addressed by the action relative to the environmental limiting factors (e.g., the biological objective of an action might be to increase egg incubation survival in a watershed that is currently limited by sediment levels).

VI. Project Cost

To the extent possible, estimate the capital cost of the project, the annual operating and maintenance (O&M) cost, a description of annual O&M activities, and the project lifetime (i.e., how many years O&M activities are expected, including indefinitely, and how long until you expect the project to provide benefits). Provide any confirmed or potential funding partners, or opportunities for cost sharing with other funders or between projects. Also, identify any confirmed or potential partners that might provide maintenance support for the project (funding support or labor support).

VII. Schedule

Describe the project schedule, including a potential start date, construction period, and environmental and biological response times (i.e., the expected time to realize environmental and biological benefits). The last points refer to the maturation period for the project during which time environmental conditions develop. For example, it may take 50–100 years before full environmental benefits (e.g., shading, channel stability, water quality) of planting riparian trees are realized.

VIII. Feasibility

Describe the feasibility and challenges of the project. Feasibility issues should include primarily technical issues, success of projects utilizing similar technology, and particular challenges posed by the specific project. Other issues of feasibility that may be included are challenges associated with property ownership, permitting, zoning, and other social-economic-legal issues.

IX. Project Support

Describe the support or potential conflicts associated with the project. Specifically, provide supporting and cooperating entities (e.g., agencies, non-governmental organizations). Are there cooperating agencies or groups, aside from the potential funding partners mentioned previously? Describe the degree of local support and any known opposition or conflicts with other parties.

X. Supporting Documents

Provide full references for each citation used to support the information presented in this questionnaire for your project. At a minimum, a reference should include the author(s) name; name of agency/organization (if applicable); title of the document; volume and title of journal, if the document is taken from a professional journal; and publisher, date, and location of publication.

Questionnaire

for

Information on Potential Projects to Support Spring-Run Chinook Salmon and Steelhead in the Sacramento River Basin for the Habitat Expansion Agreement

DUE: Friday, February 13, 2009

Send completed questionnaires to hea@water.ca.gov

I. Contact Information

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II. Project Description

Project Name:	Battle Creek Restoration Project
Reference No. or New:	B-1 and B-2.
Project Location:	Tehama County, approximately 2 miles South of the town of Manton

Project Description:

Financial support of implementation of Phase 1(b) of the Battle Creek Restoration Project. Phase 1(b) includes a new tailrace connector from Inskip powerhouse to Coleman Canal and a water bypass channel near Inskip Powerhouse. This phase potentially includes removal of Coleman Diversion Dam, depending on the timing of the completion of Phase 2. The project also includes financial support of implementation of Phase 2 of the Battle Creek Restoration Project. Phase 2 includes removing Coleman Diversion Dam (if not completed in Phase1(b)), South, Lower Ripley Creek Feeder, and Soap Creek Feeder Diversion Dams; installing screens and ladders on Inskip Diversion Dam; a tailrace connector from South Powerhouse to Inskip Canal and decommisioning South Canal.

III. Species Limiting Factors

In this section, describe the limiting factors for spring-run Chinook salmon and steelhead in your watershed. The last page of this questionnaire defines the limiting factors.

Limiting Factors	Description (from back page)	Rank
☐ **Channel Form**		Select Rank
☐ **Channel Unit Types**		Select Rank
☐ **Substrate**		Select Rank
☐ **Structure**		Select Rank
☒ **Flow**	The flow in South Fork Battle Creek is reduced to 3-5 cubic feet per second (cfs) due to diversions for hydro-power, thus severely limiting habitat for all life stages of spring-run Chinook salmon and steelhead.	Critical
☒ **Temperature**	Because of the reduced flow, water temperatures increase to levels lethal to all life stages of spring-run Chinook salmon and steelhead	High
☐ **Water Quality**		Select Rank
☒ **Passage**	The diversion dams have ladders that are to small or are in poor condition and therefore block spring-run Chinook salmon and steelhead access to approximately 16.3 miles of prime habitat.	Critical
☐ **Riparian/Floodplain**		Select Rank

Source Documents:

Battle Creek Restoration Project EIS/EIR (2005), Battle Creek Salmon and Steelhead Restoration Plan (1999).

Additional Notes:

IV. Project Objectives—Environmental

In this section, describe how your project will affect one or more of the limiting factors for spring-run Chinook salmon or steelhead described above.

Limiting Factor	Description and Objective	Focus
☐ **Channel Form**		Select Focus
☐ **Channel Unit Types**		Select Focus
☐ **Substrate**		Select Focus
☐ **Structure**		Select Focus
☒ **Flow**	When the project is completed flow will be increased downstream of Inskip Diversion Dam from the current 3-5 cfs up to 35-40 cfs. Upstream of Inskip Diversion Dam the flows will increase to natural	Primary

IV. Project Objectives—Environmental

	flows because South Diversion Dam will have been removed.	
☒ **Temperature**	The increased flow will lower the temperatures in Battle Creek to levels capable of supporting all life stages of spring-run Chinook salmon and steelhead, including incubation of eggs.	Primary
☐ **Water Quality**		Select Focus
☒ **Passage**	Removal of two dams and a new fish ladder at Inskip Diversion Dam will allow access to 16.3 miles of prime spring-run Chinook and steelhead habitat that has not been used since the early 1900's when the hydro-electric projects were first built. Construction of a State and federally approved fish screen will allow safe passage of emmigrating juveniles passed the diversion canal.	Primary
☒ **Riparian/Floodplain**	The increased flow and additional nutrients from decaying salmon carcasses will likely result in healthier riparian forest/vegetation.	Secondary

V. Project Objectives—Biological

In this section, describe the objective(s) of your project relative to the goal of providing habitat for spring-run Chinook salmon and steelhead. Indicate the species and life stage that are targeted by the project. (It is okay to have more than one species/life stage target).

Target Species: ☒ Spring-Run Chinook Salmon **Population Status Specific to Watershed:** Extirpated

Target Life Stages:

☒ Spawning ☒ Egg Incubation ☒ Summer Rearing ☒ Winter Rearing

☒ Juvenile Emigration ☒ Adult Immigration ☒ Adult Holding

Description of Project Objectives:

In the early 1900's several dams were built on Battle Creek as part of a hydro-electric power production project. The dams on South Fork Battle Creek diverted a majority of the water out of this tributary and blocked passage of adult spring-run Chinook salmon. Completing Phase 1(b) and Phase 2 of the project will restore water flow, temperature, and spring-run Chinook salmon access to16.3 miles of prime historic spring-run Chinook salmon habitat. Additionally the project will restore optimum water temperatures for egg incubation, juvenile rearing, and outmigrating smolts while screening the diversion will prevent emegrating juveniles from being drawn into the canal.

Target Species: ☒ Steelhead **Population Status Specific to Watershed:** Intermittent

Target Life Stages:

☒ Spawning ☒ Egg Incubation ☒ Summer Rearing ☒ Winter Rearing

☒ Juvenile Emigration ☒ Adult Immigration

Description of Project Objectives:

[Same as Above for Spring-Run Chinook Salmon]

VI. Project Cost

Capital Cost:	Phase 1(b) cost estimate is $26 million, Phase 2 cost estimate is $47 million, we are recommending approximately $30 million of HEA money that will be matched with other funds.
Annual Operation and Maintenance Cost:	Not estimated
Annual Operation and Maintenance Description:	Not estimated
Project Lifespan:	Perpetuity
Project Partners (Funding):	Possibly California Department of Fish and Game (CDFG), California Wildlife Conservation Board (WCB), California Department of Water Resources (DWR), Pacific Gas and Electric Company (PG&E), and/or Bureau of Reclamation (Reclamation).
Project Partners (Maintenance):	PG&E will own and maintain all of the improvements and related hydro-power facilities, and have agreed to maintain them in working order.

VII. Schedule

Proposed Start:	Summer 2010
Expected Time to Completion:	2-4 years
Expected Time to Realize Environmental Benefits:	Immediately after completion.
Expected Time to Realize Biological Benefits:	First winter and spring after completion, full benefit after a few generations of returning Chinook salmon and steelhead. Spring-run Chinook salmon and steelhead are present in the drainage downstream of the dam, and are expected to occupy the newly opened habitat during their first adult migration event after completion.

VIII. Feasibility

Technical Feasibility:	This project is very feasable, the feasability studies are complete, engineering and design is complete and the various environmental documents are complete.
Technical Challenges:	None that have not been identified and adequately addressed.
Related Projects:	North Fork Battle Creek restoration is scheduled to start in the Summer of 2009 (Phase 1(a)) and will provide access and suitable habitat for spring-run Chinook salmon and steelhead to 11 miles of North Fork Battle Creek.
Ownership or Permitting Challenges:	There is one landowner near Inskip Dam that is unhappy with various aspects of the project. PG&E continues to work with them to resolve the issues.

VIII. Feasibility

Conflicts with Cultural, Zoning, or Other Issues:	None known

IX. Project Support

Supporting Entities:	DWR, Regional Water Quality Control Board, State Water Resources Control Board, The Nature Conservancy, Metropolitan Water District, Battle Creek Watershed Conservancy, Nor-Cal Fishing Guides and Sportsman Assn., U.S. Forest Service, Lassen National Forest
Cooperating Entities:	CDFG, PG&E, Reclamation, U.S. Fish and Wildlife Service, NOAA Fisheries.
Degree of Local Support:	High
Known Opposition:	Oasis Springs Lodge

X. Supporting Documents

Please provide a full reference for each citation used to support the information presented in this questionnaire.

Kier Associates. 1999. Battle Creek Salmon and Steelhead Restoration Plan. Prepared for the Greater Battle Creek Watershed Working Group. January. Sausalito, CA.

Jones and Stokes. 2005. Battle Creek Salmon and Steelhead Restoration Project Final Environmental Impact Statement/Environmental Report. July. Sacramento, CA.

Definitions of Limiting Factors for Spring-Run Chinook Salmon and Steelhead

Channel Form

This attribute describes changes to the channel, including incision, aggradation, diking, armoring, and other modifications of the channel adversely affecting spring-run Chinook salmon and steelhead.

Channel Unit Types

Examples of geomorphic features of the channel that form habitat types for spring-run Chinook salmon and steelhead are pools, riffles, glides, and runs. This attribute describes changes in the frequency and size of such features. For example, removal of large wood may reduce the frequency of pools, presence of steps, or retention of gravel for riffles.

Substrate

This attribute describes changes in the composition of the substrate of the stream, including increase in fine sediment and lack of gravel recruitment.

Structure

This attribute describes the loss of structural elements in the stream such as large wood, boulders, undercut banks, and so on. Loss of structure results in a simplification of the channel and influences Channel Form and Channel Unit Types.

Flow

This attribute addresses modification of the flow regime, including decrease in summer low flow, increased "flashiness," and dewatering of the channel as a result of withdrawals.

Temperature

Change in water temperature can be attributable to human actions such as removal of riparian shading. This attribute describes the increase in summer water temperature and the loss of temperature refugia (springs or groundwater) as a result of human actions.

Water Quality

This attribute pertains to the input to the stream of toxins or pollutants that produce adverse impacts on spring-run Chinook salmon or steelhead. This can include chemical pollutants such as fertilizer and pesticides and nutrient sources such as cattle and feedlots.

Passage

This relates to the effect of impediments to adult or juvenile migration of spring-run Chinook salmon or steelhead, including dams, culverts, channel dewatering, and other structural and channel modifications. Please describe the location of the passage impediment and describe the extent of impediment (i.e., a complete or partial blockage to migration).

Riparian/Floodplain

This attribute describes the loss of functionality of the riparian forest/vegetation and the connection of the stream to the floodplain during high water and flooding.

Population Condition Definitions for Section V. Project Objectives—Biological

Increasing

Adult returns of the target species to the watershed have generally been increasing over the last several years; expectations are that the species is displaying characteristics of a rebuilding or healthy population.

Stable

Adult returns of the target species to the watershed show no clear trend over the last several years.

Decreasing

Adult returns of the target species to the watershed are declining over the last several years; the decline in abundance is a cause of concern and characteristic of a potentially unhealthy population.

Intermittent

Adult returns of the target species are occasionally seen in the watershed, but there is no viable or sustained population in the basin.

Extirpated

The population has been eliminated from the watershed although the species was present in the past.